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Vol. 10, no.7. February, 1941.

Accidents.

Accidents are costly. By G. Stewart Brown. Michigan farmer. v.94, no.5. August 31, 1940. p.3, 15.

Is your home safe? Hoard's dairyman. v.86, no.1. January 10, 1941. p.12.

Air Conditioning.

Comfort requirements for low humidity air conditioning. By F. C. Houghten, H. T. Olsen and S. B. Gunst. Heating, piping and air conditioning. v.13, no.1. January 1941. p.57-63.
Paper reports results of Laboratory's study at 30 per cent relative humidity with some comparison in higher humidity conditions, and few exploratory tests in air conditions having humidities as low as 15 per cent.

Industrial controlled atmospheres. Part 1. By Norbert K. Koebel. Iron age. v.146, no.21. November 21, 1940. p.33-39.
Describing industrial controlled atmospheres and methods for heat treating high carbon, tool and alloy steels decarburization-free and bright. Attention is directed specifically to determining efficiency of controlled atmosphere, and air-gas ratio method of controlled atmospheres.

Industrial controlled atmospheres. Part 2. By Norbert K. Koebel. Iron age. v.146, no.22. November 28, 1940. p.40-46.
Attention is directed to pack hardening, atmosphere produced by carbonaceous muffle blocks, atmosphere produced by cracking liquid hydrocarbons and theory of good atmosphere.

Industrial controlled atmospheres. Part 3. By Norbert K. Koebel. Iron age. v.146, no.23. December 5, 1940. p.45-51.
Author describes nitrogen generators and nitrogen atmospheres, and double cracked gas for heat treating high carbon and tool steels decarburization-free bright or scale-free.

Industrial controlled atmospheres. Part 4. By Norbert K. Koebel. Iron age. v.146, no.24. December 12, 1940. p.48-53.
Data are given on charcoal generator gas, hydrogen and hydrogen - nitrogen atmospheres.

Agriculture.

Farm cash income in 1940. Farm implement news. v.62, no.5. March 6, 1941. p.40. Increases shown in forty states.

Report of number of farms counted by census enumerators in 1940, 1935 and 1930. Farm implement news. v.62, no.4. February 20, 1941. p.30.

Air Raid Protection.

Air-raid precautions in factories. Engineering. v.150, no. 3899. October 4, 1940. p.272.

Air raid protection. Architectural forum. v.73, no.5. November 1940. p.429-436.

Air raid shelters. By C. G. Flebus. Military engineer. v.33, no.187. January-February 1941. p.37-42. Factors and methods influencing design of shelters. Light shelters. Medium type shelters. Heavy protective shelters.

Protection of windows against air-raid damage. Engineering. v.150, no.3899. October 4, 1940. p.275-277.

Resistance to collapse of structures under air attack. By John Fleetwood Baker. Journal of the institution of civil engineers. v.14, no.8. October 1940. p.481-484. Attention of designer is drawn to general points which he should consider when designing new structures, or when strengthening existing buildings. Structures discussed:--(a) Fully-framed steel or reinforced-concrete multi-storey buildings. (b) Single-storey modern steel factory buildings. (c) older buildings, often partly framed and partly wall-bearing. (d) special types, such as erection-sheds, with very long spans.

When bombs fell on Barcelona. By R. Perera. Water works engineering. v.94, no.26. March 12, 1941. p.282-286. Valuable information gained regarding bombing from the air and damage to water systems, during recent civil war in Spain.

Alcohol Fuel.

'Alky-gas' expected to get new fling in Congress and state Legislatures. National petroleum news. v.32, no.50. December 11, 1940. p.34-36.

Grape alcohol for motor fuel. California cultivator. v.87, no.26. December 28, 1940. p.693. Discussion of substitute fuels.

Notas sobre el alcohol carburante. By William E. Cross. Revista industrial y agricola de Tucuman. v.30, nos.4-6. April-June 1940. p.109-117. Notes on power alcohol.

Alcohol Fuel. (Cont'd.)

Power alcohol in tractors and farm engines. By E. L. Barger. Agricultural engineering. v.22, no.2. February 1941. p.65-67, 78. Paper reports results of tests to determine some of physical properties of alcohol blends with tractor fuels; and performance characteristics of farm engines operating on alcohol blends.

Animals, Effect of Rays on

Effect of short-wave irradiation on farm animals. By Truman E. Hienton. Agricultural engineering. v.22, no.2. February 1941. p.47-48.

Barns.

Beef barn for the thrifty. By Cameron Hervey. Successful farming. v.39, no.2. February 1941. p.11. Built for but $1,800, this unusual beef barn combines economy with the utmost in efficiency.

Cleaning the barn mechanically. Hoard's dairyman. v.85, no.23. December 10, 1940. p.601, 623. Advantages: 1. Labor saving on heavy work. 2. Time saving in getting manure on spreader. 3. Further time saving in there being no need for cleaning up drive of wet spots resulting from spreader loading under ordinary procedure. 4. Liquid manure is saved by faster loading. 5. Narrower driveway can be used because no driving through is necessary. 6. Barn door need not be opened on severely cold winter day. Disadvantages: 1. Dairy unit is loaded up with one more expense. 2. Straight, square-sided concrete gutter is only adapted to this particular system. 3. Repairs are not too pleasant to make and compare frequency with those on manure spreader. 4. Cables have not been made to withstand corrosive action of urine and replacements are frequent. 5. Electricity is necessary as hand powered windless equipment would result in little labor saving. 6. Requires reasonably long bedding for successful operation.

Binder Twine.

America's food supply and American binder twine. By U. S. Binder Twine Committee. Farm implement news. v.62, no.4. February 20, 1941. p.32-33.

Building Construction.

Analysis of building frames with semi-rigid connections. By Bruce Johnston, and Edward H. Mount. American society of civil engineers. Proceedings. v.67, no.3. March 1941. p.405-431.

Bibliography. Architectural forum. v.73, no.5. November 1940. Bibliography p. 1-16. Research efforts to uncover sources of information upon building industry's past and future roles in national defense.

Building Construction. (Cont'd.)

Investigation of steel rigid frames: Discussion. By Messrs. LaMotte Grover and William R. Osgood. American society of civil engineers. Proceedings. v.67, no.3. March 1941. p.467-473.

Laminated rafters. By S. A.Witzel. Successful farming. v.39, no.3. March 1941. p.16, 52-53. Formed of thin layers, glued, they go up in less time at somewhat lower cost--and are found four times as strong.

Reinforced grouted brickwork. By J. A. Muller, Jr. Bulletin of society of American military engineers. No.5. February 1941. p.22-24. New system of brick construction will stand eight times the strain of wall built in customary way and costs one third less.

Theory of elastic stability applied to structural design: Discussion. By Joseph S. Newell. American society of civil engineers. Proceedings. v.67, no.2. February 1941. p.233-235.

Theory of elastic stability applied to structural design: Discussion. By Messrs. Harold D. Hussey, H. N. Hill, and F. H. Frankland. American society of civil engineers. Proceedings. v.67, no.3. March 1941. p.447-456.

Building Materials.

Compression of wood. By R. M. Seborg and A. J. Stamm. Mechanical engineering. v.63, no.3. March 1941. p. 211-213. Materials are compressed during manufacturing process and are subject to certain amount of recovery of compression. Object of paper is to present the conditions under which recovery occurs and conditions under which it will not occur for simplest of three systems, namely, ordinary compressed wood.

Concrete in sea water: a revised viewpoint needed: Discussion. By Thomas E. Stanton. American society of civil engineers. Proceedings. v.67, no.3. March 1941. p.512-513.

Cotton enters the building trade. By Gene Holcomb. Farmers digest. v.4, no.10. February 1941. p.13-18.

Expansion of concrete through reaction between cement and aggregate: Discussion. By Bailey Tremper. American society of civil engineers. Proceedings. v.67, no.3. March 1941. p.509-511.

Plastic theory of reinforced concrete design: Discussion. By Messrs. L. E. Grinter and Basil Sourochnikoff. American society of civil engineers. Proceedings. v.67, no.2. February 1941. p.260-264.

Building Materials. (Cont'd.)

Plastic theory of reinforced concrete design: Discussion. By Messrs. R. W. Stewart, George C. Ernst, Homer M. Hadley, and Robert W. Abbett. American society of civil engineers. Proceedings. v.67, no.3. March 1941. p.491-500.

Recommended practice and standard specifications for concrete and reinforced concrete: Discussion. By O. G. Julian. American society of civil engineers. Proceedings. v.67, no.2. February 1941. p.247-254.

Recommended practice and standard specifications for concrete and reinforced concrete: Discussion. By Jacob Feld. American society of civil engineers. Proceedings. v.67, no.3. March 1941. p.457-464.

Research sets proportions for concrete in advance. By William A. Blanchette. Concrete. v.49, no.2. February 1941. p.8-11, 54. Article describes method which may be adapted for use in research investigations pertaining to concrete and to materials of which concrete is composed. It utilizes certain inherent relations which, as result of research investigations, have been found to exist in concrete mixtures.

Stabilized mud for building. By E. L. Hansen. Engineering news record. v.126, no.1. January 2, 1941. p.55-57. Illinois tests indicate that useful building material can be made on site from stabilized mud, by mixing soil with emulsified asphalt and water and drying it in air. 200-mesh material should be held to 20-30 per cent, emulsion to about 5 per cent of total mix. Different emulsions differ greatly in efficiency.

Stainless steel wallboard resists rust and corrosion. Popular mechanics. v.74, no.2. August 1940. p.215. Wallboard surfaced with thin sheet of stainless steel is unaffected by acids or chemicals and will not corrode, tarnish nor rust. It has backing of plaster composition. Furnished in satin or pebble finish, wall covering has many uses such as for shower stalls, sink coverings and hearth.

Tests of beams reinforced with "bundle-bars". By Homer M. Hadley. Civil engineering. v.11, no.2. February 1941. p.90-93. Relaxing of specifications on permissible stresses suggested as limited investigation indicates close spacing of steel may cause no loss of supporting power.

Veneering increases scope of craftwork. Part 1. Popular mechanics. v.74, no.5. November 1940. p.788-793.

Chemistry, Technical

Chemicals from the farm. By C. C. Furnas. Science digest. v.9, no.2. February 1941. p.15-24. If American farmer takes fullest possible advantage of efficient mechanical methods he can produce his crops at price at which industry not only can but will be glad to take them as raw materials of chemurgic industry. This means that modern, scientific, large-scale mechanical operations will have to become universal on all and not just on some farms--all farms, that is, that hope to operate at profit. To achieve high standard of living farmer must keep pace with industry. Old-time inefficient, subsistence philosophy of farm will simply have to go if farmer is to hope for standard of living comparable with that of manufacturing folk. Small, one-family farm as individual unit will disappear. This suggests that farmer will be faced with insecurity, loss of control over his own life, regimentation of present-day factory worker. Admittedly he will be unless these industrial problems are solved. Moreover farming as a distinctive pattern of life is on the way out. On more technical front we must take steps to circumvent depletion of land; for removing materials on industrial scale from soil to manufacturing plants could quickly bring us to complete soil sterility. We must make intelligent and complete use of all available knowledge of artificial fertilizers and of soil crop-control. When we atart changing time-honored balance of nature we are forced to move carefully and to plan every step. This will call for expert guidance--and rigid control.

Chemurgy arrives. Business week. no.591. December 28, 1940. p.36-37. U. S. research labs and countless private projects now testify to agriculture's new role in industrial economy.

Cold Storage.

Amounts of perishable foods in cold storage. Ice and refrigeration. v.100, no.1. January 1941. p.60-61. Statistics showing amount of perishable foods held in cold storage as reported by Bureau of Agricultural Economics, United States Department of Agriculture.

Transportable cold store. Modern refrigeration. v.43, no. 512. November 1940. p.216. Store is capable of holding 10 tons of frozen meat at temperature of 18°F., with ambient air temperature of 100°F. Refrigerating equipment, which operates with methyl chloride as refrigerant, is located in self-contained casing at rear end of store, refrigerating unit being driven by means of petrol engine. Advantages: (1) Easy to erect and dismantle. (2) Durability of material under service conditions. (3) Rigidity and strength with handable size sections. (4) Interchangeability of parts. (5) Capability of withstanding all types of weather conditions, from high winds to tropical sun, and the resistance to the white ant.

Corrosion.

Proposed reference standards of rusting of painted iron or steel surfaces. ASTM Bulletin. no.107. December 1940. p.25-27.

Cotton Gins and Ginning.

Surveying power consumption at gins. By Victor L. Stedronsky, Thomas L. Baggette, and Arvid J. Johnson. Cotton ginners' journal. v.12, no.4. January 1941. p.5-6, 14.

Unloading-fan improvements for increased efficiency in cotton ginning. By Charles A. Bennett and Francis L. Gerdes. Cotton ginners' journal. v.12, no.6. March 1941. p.5, 16-17.

Cotton Machinery.

Cotton-cleaner. Business week. no.591. December 28, 1940. p.38. Invention grew out of need to raise grade of cotton picked by mechanical picker, by removing trash. By its use, according to Rust, cotton will come out "middling or better."

Cottonseed.

Cottonseed research program of the national cotton council. By H. S. Olcott and L. W. Bass. Cotton and cotton oil press. v.41, no.26. December 21, 1940. p.5-7, 18.
Cottonseed research has constituted important part of activities of Multiple Industrial Fellowship of Cotton Research Foundation at Mellon Institute since project was established in July, 1937. In 1939 Cotton Research Foundation became affiliated with National Cotton Council as its research agency and scope of its work was thereby widened materially. Following brief review has been prepared to acquaint cottonseed industry with plans and progress of Fellowship.

Crops (Drying).

New aspects on the drying and disinfection of cereals. By E. Gasser and G. Stampa. Monthly bulletin of agricultural science and practice. v.31, no.11. November 1940. p.391-403.
Effective disinfection and storage of grain stocks and many other agricultural products is of highest economic importance. In this article, best systems of drying and disinfection are briefly reviewed, with special reference to physical methods, often preferable to usual processes of disinfection by chemical means. Among physical methods mentioned, system of simultaneous disinfection and drying by means of infrarod radiation--which gives very good results--is treated in more detail.

Temperature effects in grass drying. By A. W. Scott. Engineering. v.150, no.3886. July 5, 1940. p.7.
Present paper deals with investigations on effect of drying temperature on (a) scorching of grass, and (b) rate of evaporation. Experiments were confined to "mat" drying conditions, i.e., drying air was passed up through stationary mat of grass, in contrast with pneumatic drying in which grass is conveyed through drier by drying air stream.

Dams.

Cavitation in outlet conduits of high dams: Discussion. By Jerome Fee. American society of civil engineers. Proceedings. v.67, no.3. March 1941. p.483-487.

Dams (Cont'd.)

Crack prevention program, Hiwassee dam. By O. Laurgaard. American society of civil engineers, Proceedings. v.67, no.3. March 1941. p.327-349. As completed, Hiwassee Dam, Tennessee Valley Authority (TVA) structure in western North Carolina, with height of 322 ft. from lowest rock foundation to roadway, was highest overflow gravity dam. Its concrete, manufactured from local graywacke rock, had to be placed largely during warm summer months. To insure that dam would be impervious to passage of water and its surface would be weather-resistant, it was important that mass should be free from major cracks. This required concrete with gradual temperature rise, one that would harden slowly, and one that would permit considerable expansion before its ultimate strength was reached. To achieve these results program included: (1) Use of low-heat cement; (2) low cement content; (3) thin casting lifts; (4) long exposure periods; (5) artificial cooling for mixing water; (6) washing, rinsing and cooling aggregate; (7) artificial cooling of concrete in place; (8) cleanup of horizontal joints between lifts; (9) use of steel reinforcement; (10) diagonal keyways on bulkhead joints; and (11) curing and winter protection. Paper shows how program progressed and how cracking has been practically eliminated by rigid control and inspection. Actually, saving in cement resulted, which more than offset additional cost of crack prevention program.

Concrete mixing and placing on large dams. II. Performance and prices. By Adolph J. Ackerman. Civil engineering. v.11, no.1. January 1941. p.19-22. Actual operating rates and unit costs of specific projects compared.

Foundation experiences, Tennessee valley authority. A symposium: Discussion. By Messrs. James S. Lewis, Jr., Robert M. Ross, Verne Gongwer, Portland P. Fox and James B. Hays. American society of civil engineers. Proceedings. v.67, no.2. February 1941. p.267-294.

Frozen-earth dam at Grand Coulee. By Lloyd V. Froage. Mechanical engineering. v.63, no.1. January 1941. p.9-15, 36.

Masonry dams. A symposium: Discussion. By James S. Lewis, Jr. American society of civil engineers. Proceedings. v.67, no.2. February 1941. p.237-239.

Directories.

Directory section: heating, piping and air conditioning equipment for industry and large buildings. Heating, piping and air conditioning. v.13, no.1. January 1941. p.203-281.

Electric Wiring.

Diagram of floor and wiring plans. Rural electrification exchange. v.2, no.3. Third quarter, 1939. p.62-63.

Electrical Equipment.

Electric hoe for garden work is built from standard parts. Popular mechanics. v.75, no.1. January 1941. p.44. Designed to take place of ordinary hand cultivator, it draws power from electric poles set every 100 feet through field, and with supply wire connected with proper pulley and weight arrangement it will cultivate 100 feet square. Motor is one-half horsepower, 110-volt, 1,725 revolutions-per-minute, dustproof type connected to reduction gear by heavy-duty flexible coupling. Motor, reduction gear and cutter wheels are mounted with two fourteen-inch cultivator wheels.

Electrically heated waxer and wax reclaimer. By C. W. Wildebour. Rural electrification exchange. v.2, no.3. Third quarter, 1939. p.70. Gives working drawings.

Small electric milk pasteurizer. By George J. Burkhardt and C. W. England. Agricultural engineering. v.22, no.3. March 1941. p.107-109.

Suggestions for maintenance of electrical equipment. By P. W. Johnston. Bakers digest. v.15, no.9. March 1941. p.175-176. What to look for when inspecting motors and other electrical units; how to meet problems of oil leakage, vibration, cleaning and drying; standards for measuring insulation resistance; also examples of frequency of inspection and testing in plants--are included in article.

Electricity-Distribution.

Progress in rural load building. By H. E. Dexter. Rural electrification exchange. v.2, no.3. Third quarter, 1939. p.49-52, 56.

Electricity on the Farm.

Electrical hazards on the farm. By Edward R. Grannis. Rural electrification news. v.6, nos. 5-6. January-February 1941. p.14, 19-20.

Electrically made steam for dairies. By J. W. Dudley. California cultivator. v.87, no.23. November 16, 1940. p.632.

Electricity on the farm. Dakota-farmer. v.60, no.11. June 1, 1940. p.242, 253.

New ideas in rural electrification engineering. By M. M. Samuels. Agricultural engineering. v.22, no.3. March 1941. p.97-100.

Erosion Control.

Application of the erosion equation to strip crop planning. By R. W. Gerdel and R. E. Allen. Agricultural engineering. v.22, no.2. February 1941. p.59-61, 64.

Crops and dams protect a watershed. By Emerson Wolfe. Agricultural engineering. v.22, no.2. February 1941. p.62-64. Table I. General specifications of dams and reservoirs.

Soil erosion by wind action. Engineering. v.150, no.3903. November 1, 1940. p.341-342.

Soil erosion by wind action. Engineering. v.150, no.3906. November 22, 1940. p.401-402.

Evaporation.

Evaporation of water from saturated surfaces. By R. W. Powell. Engineering. v.150, no.3899. p.278-280.

Farm Machinery and Equipment.

Development of grass silage and forage harvesting machinery. By F.W. Duffee. Farm implement news. v.62, no.5. March 6, 1941. p.41-45.

Down machinery row for 1941. By Brownlee Davidson. Successful farming. v.39, no.2. February 1941. p.16-17.

Economics of farm machinery. By Frank A. Briggs. Farm and ranch. v.59, no.12. December 1940. p.22-23.

Equipment, methods, and costs of collecting farm crop residues. By R. B. Gray. Agricultural engineering. v.22, no.2. February 1941. p.57-58.

Golden age of farm power. By Douglas Gray. New Jersey farm and garden. v.12, no.1. January 1941. p.14-15, 60.

Hay rake, loader and stacker run by tractor. Popular mechanics. v.75, no.3. March 1941. p.385. Capable of stacking or loading twenty or more acres of average hay or straw in one day, it will handle more than average combine can cut. One lever controls entire operation, either with tractor in motion or standing still. Fork can be guided accurately to place load gently in spot desired, at any height up to sixteen feet, so one man working on load or stack is sufficient. Besides handling hay, straw, manure, etc., machine can be equipped with large scoop for loading lime, sand or gravel, and corn or cobs. Entire rake head is simple and quick to attach or take off, since only two bolts are used to hold it in place. Winch mounted in front operates independently in performing many other tasks on farm. Unit weighs little more than 600 pounds, and when attached to tractor it can go anywhere team and wagon goes, and no time need be lost in transporting it from one farm or field to another.

Farm Machinery and Equipment. (Cont'd.)

Home-made planimeter. By Howard Matson. Agricultural engineering. v.22, no.3. March 1941. p.94, 109.

Industry's trade showed slight drop in 1939. Implement & tractor. v.55, no.8. April 13, 1940. p.20-22, 50.

Interdependence of farm and factory. By Harry G.Davis. Northwest farm equipment journal. v.55, no.2. February 1941. p.38-40.

Machine farming in the Northeast. By Charles S. Phelps. Rural-new-yorker. v.100, no.5499. March 22, 1941. p.194.

Machine and jobs. By Leonard J. Fletcher. Agricultural engineering. v.22, no.3. March 1941. p.85-88, 92.

Machines that save the land. By Carlton Stoddard. Successful farming. v.39, no.2. February 1941. p.12-13. Illustrations.

Progress in farm mechanisation. By J. E. Newman. Country life. v.88, no.2289. November 30, 1940. adv. p.36, 38. Revolution of 1939-40.

Tests of tillage tools. By I. F. Reed. Agricultural engineering. v.22, no.3. March 1941. p.101-104. III. Effect of shape on the draft of 14-inch moldboard plow bottoms.

Tractor and combine sales near record in 1940. Implement & tractor. v.56, no.4. February 15, 1941. p.12-13. Nearly 40 per cent gain in sales of All Purpose wheel tractors. Nineteen of each twenty tractors sold in U. S. equipped with rubber tires. Smaller combines, 6 feet and less, 86.4 per cent of all sold in domestic market. Popularity of smaller units in all lines shown in relatively lower earnings. Marked decline in thresher demand.

Value of farm machines, automobiles, motor trucks, cotton gins and harness on farms. Farm implement news. v.62, no.4. February 20, 1941. p.31.

Vegetables in Texas. By Leslie R. Hawthorn. Rural New-Yorker. v.100, no.5497. February 22, 1941. p.114, 122. Labor saving machinery and hand labor both used. Irrigation.

Fats and Oils.

Processing oil seeds and nuts. Part 2. By John F. Leahy. Southern power & industry. v.59, no.3. March 1941. p.63-69. Research develops important industrial application possibilities for the products of cottonseed, soybeans, etc. New equipment and processes are included in description of new plant.

Feed Grinders and Grinding.

Automatic feed control for small feed grinders. By C. J. Hurd. Agricultural engineering. v.22, no.2. February 1941. p.69.

Fences.

Purchase of fencing on specification. By S. A. Braley. Agricultural engineering. v.22, no.2. February 1941. p.49, 50.

Fertilizer Placement.

Influence of placement upon the movement of fertilizer salts in the soil. By J. M. Blume, M. M. Parker and E. R. Purvis. American fertilizer. v.93, no.13. December 21, 1940. p.8-9, 24, 26.

Fire Protection.

Don't keep the home fires burning. American home. v.25, no.3. February 1941. p.56-57.

Fighting farm fires. By W. Franklin Moore. Rural New-Yorker. v.100, no.5497. February 22, 1941. p.123.

Fighting farm fires. Part 2. By W. Franklin Moore. Rural New-Yorker. v.100, no.5499. March 22, 1941. p.203.

Lessening fire hazard of christmas trees. Popular mechanics. v.75, no.1. January 1941. p.110-111.

Maintenance of hand fire extinguishers. Bakers digest. v.15, no.9. March 1941. p.174. Recommendations issued by the Safety Research Institute, New York, N. Y.

Fireplaces.

Chef's specials. House & garden. v.78, no.4, sec.2. October 1940. p.56. Four different types of outdoor fireplaces.

Flax.

Some requirements of fiber flax. By W. L. Powers. Better crops with plant food. v.25, no.2. February 1941. p.15-16, 42-43.

Floods and Flood Control.

Flood-forecasting service in Pennsylvania. By John W. Mangan. Journal of American water works association. v.33, no.2. February 1941. p.213-218.

Floods and Flood Control. (Cont'd.)

Maximum probable floods on Pennsylvania streams: Discussion. By Messrs. Gordon R. Williams, and Emil P. Schuleen. American society of civil engineers. Proceedings. v.67, no.2. February 1941. p.240-246.

Floors.

How to lay linoleum for most satisfactory service. American builder. v.62, no.11. November 1940. p.75, 97-98.

New floors for new beauty. By Charles Dart. Successful farming. v.39, no.3. March 1941. p.28, 57-58.

Flow of Water and Gases.

Flow and loss of head in distribution systems. By J. J. Doland. Journal of American water works association. v.33, no.2. February 1941. p.234-236.

Integration of natural and artificial light. By Hans Blumenfeld. Architectural record. v.88, no.6. December 1940. p.49-56.

On the four regimes of open-channel flow. By J. M. Robertson and Hunter Rouse. Civil engineering. v.11, no.3. March 1941. p.169-171. Experiments emphasize distinction between laminar-turbulent and tranquil-rapid classifications.

Foods, Frozen.

Food freezing methods. Modern refrigeration. v.43, no.512. November 1940. p.225, 228. Study of the application of refrigerating effect.

Quick freezing and storage of poultry. By Wm. J. Finnegan. Ice and refrigeration. v.100, no.1. January 1941. p.69-76.

Forage Crops.

Relation of agronomic and nutritional factors to engineering problems and farm practices in making grass silage. By T. E. Woodward. Agricultural engineering. v.22, no.2. February 1941. p.54-56.

Thermal decomposition of undercured alfalfa hay in its relation to spontaneous ignition. By E. J. Hoffman. Journal of agricultural research. v.61, no.4. August 15, 1940. p.241-257. Investigation reported was undertaken to obtain further evidence of formation of unsaturated substances, without intervention of micro-organisms, in undercured alfalfa hay subjected to heat in inert atmosphere.

Frost Protection.

Infrared lights fail to give immediate frost protection. By Hayden Gorden and F. A. Brooks. California citrograph. v.25, no.11. September 1940. p.350, 372-373.

Progress in orchard heating. By D. J. Whitney. California cultivator. v.87, no.23. November 16, 1940. p.616-617.

Fuels.

Basic facts on wood burning. By L. E. Webber. Power. v.85, no.3. March 1941. p.60-62.

Gasoline and coal made from farm crops. Popular mechanics. v.75, no.2. February 1941. p.166-167. Already, crude oil, bituminous coals, asphalts and coke have been produced from materials like corn, wood, algae, seaweed, leaves and molasses. These are rich in compounds known as carbohydrates, of which cellulose, starch and sugar are examples. Resulting coals, asphalts and oils have the same properties as natural products. Great advantage of new process is that fuel source is provided that can be renewed constantly.

Greenhouses.

Plans and suggestions for building small greenhouse. Rural electrification exchange. v.4, no.1. First quarter, 1941. p.23. Agricultural engineering department. Puget sound power & light company.

Heating.

Efficiency of electrical heating. By W. J. Radle and R. G. Wilson. School science and mathematics. v.41, no.3. March 1941. p.220-225. Deals with efficiency of electrical heating apparatus, but it is of preliminary nature only, dealing chiefly with methods of investigation, and is not intended to be general index of efficiency of electrical heating. Direct object of investigation was small inexpensive electric hot plate rated at 660 watts for use at 115 volts.

Hand firing economically. By W. Clyde Lamney. Popular mechanics. v.75, no.1. January 1941. p.119-122.

Heating. (Cont'd.)

Laboratory method for cyclic heat measurements on walls and roofs. By E. R. Queer and F. G. Hechler. Heating, piping and air conditioning. v.13, no.1. January 1941. p.48-52. It has become increasingly important to determine effect of heat capacities of walls and roofs, of sunshine, and of daily cyclic temperature changes for air conditioning and heating design. Adaptation of guarded hot-box equipment is described for use with cyclic variable heat flows, which will give required data quickly and economically. Cyclic heat-flow tests are reported on standard house wall construction. Assumed surface temperature cycle was imposed on outside surface of wall and tests were made with wall uninsulated, insulated with medium amount of very low density insulation, and with large amount of low density insulation.

The new specific heats. Mechanical engineering. v.63, no.2. February 1941. p.126-135. Addenda to and discussion of paper by R. C. H. Heck.

Operating results of a residence radiant wall heating system. By E. J. Rodee. Heating, piping and air conditioning. v.13, no.1. January 1941. p.53-56. Operating results of radiant wall heating system, with units concealed in outside and inside walls, are reported for residence. Wind movement appreciably affected heat loss, but effect of sunshine showed no significant influence in cost of operation. It is concluded that wall heating system can be installed in outside walls of house without increasing wall thickness and without more than normal amount of insulation and results will compare favorably with free standing radiators from standpoint of operating cost. System used differs considerably from types that have been popular in British Isles and continental Europe for number of years. It is noted that temperature difference between floor and ceiling is less when heat is supplied by walls than when it originates from free standing radiators. In charts presented, it will be noted that air temperature near ceiling remains constant with wall heating system, between 75 and 76 F, regardless of point on heating cycle, while with radiator heating air temperature near ceiling is approximately 7 deg. higher at maximum point of heating cycle than at minimum point.

Panel heating throughout the world. Heating, piping and air conditioning. v.13, no.2. February 1941. p.96-98. Emphasizes extent and diversity of existing installations. It is pointed out that uniform temperature gradient with this type of heating is principal reason for its application to high ceilinged rooms in churches and banks, that advantage in factories is possibility of obtaining local regions or zones of comfort in space where general temperature level is low, and that in hospitals and schools it provides means of establishing comfort while still retaining open air environment. Reasons for wider acceptance of panel heating in large buildings as compared with residences are also presented.

Heating. (Cont'd.)

Radiation as a factor in the sensation of warmth. By F. C. Houghten, S. B. Gunst, and J. Suciu, Jr. Heating, piping and air conditioning. v.13, no.2. February 1941. p.123-134. Tests are reported for two rooms oriented to give as nearly as possible, same exposure and heated by radiation and convection means. Reactions of subjects are reported giving sensations of draft, coolness and warmth for two types of heating. Appraisal of radiation factor in influencing person's feeling of warmth was studied with reference to relation between effective temperature and mean radiant temperature conditions.

Wood-burning space heaters. By L. E. Seeley and F. W. Keator. Mechanical engineering. v.62, no.12. December 1940. p.864-870. Report on preliminary tests of units designed especially for burning wood.

Houses.

Low cost homes built to last. Popular mechanics. v.75, no.1. January 1941. p.40-43, 126A.

Humidity.

Dew-point recorder for measuring atmospheric moisture. By C. W. Thornthwaite and J. C. Owen. Monthly weather review. v.68, no.11. November 1940. p.315-318.

Hydraulics.

Laws of hydraulics, head resistances, nozzle shapes and weir measurements of flow. By C. W. Harris. Farm implement news. v.62, no.3. February 6, 1941. p.41-42.

Hydroponics.

Possibilities and limitations of growing plants without soil outlined. By F. B. Wann. Farm & home science. v.2, no.1. March 1941. p.6, 8. This type of culture has many possibilities for greenhouse plants but not for growth of ordinary crops.

Irrigation.

Efficiencies in irrigation. By O. W. Israelsen. Utah farmer. v.60, no.13. February 25, 1941. p.3, 9.

Irrigation research in India. Engineering. v.150, no.3906. November 22, 1940. p.403-405.

Irrigation. (Cont'd.)

Uniformity of application of water by sprinkler systems. By J. E. Christiansen. Agricultural engineering. v.22, no.3. March 1941. p.89-92. Summary and conclusions: 1. Uniformity of distribution of water from sprinklers varies greatly, depending upon pressure, wind, rotation of sprinkler, spacing, and many other factors. 2. Nearly uniform application is possible with proper sprinkler patterns and with proper spacing of sprinklers. 3. Sprinkler patterns approximately conical, where maximum application occurs near sprinkler and decreases gradually to edge of area covered, produce uniform application when sprinklers are not farther apart than 55 or 60 per cent of diameter covered. 4. For wider spacings pattern for which application is uniform for some distance from sprinkler and then tapers off gradually, is better, but maximum uniformity obtainable decreases with spacing for all spacings greater than 50 per cent of the diameter covered. 5. For spacings greater than 50 per cent of diameter and with equivalent areas covered by each sprinkler, more uniform application can be obtained with equilateral triangular arrangement of sprinklers than with square or rectangular arrangement. 6. Triangular arrangement of sprinklers is more sensitive to spacing than square or rectangular one. That is, for given pattern uniformity of application varies more with variation in sprinkler spacing. 7. With portable system and with sprinklers producing desirable patterns, good distributions can be obtained when line is moved not farther than 50 to 70 per cent of diameter covered by sprinkler, and when spacing of sprinklers along line is not more than 35 per cent of diameter covered.

Kitchens.

How to arrange kitchens for various types of plan. American builder. v.62, no.11. November 1940. p.80-85. This article gives diagrams of kitchen floor plans and indicates the location of equipment in them.

Lubrication.

Modern farm machinery requires quality lubricants. Lubrication. v.26, no.11. November 1940. p.121-132.

Manure Spreaders.

Manure spreading becomes modernized. Implement & tractor. v.56, no.6. March 15, 1941. p.12-13, 18.

Uniform spreader for fertilizer is useful also as seeder. Popular mechanics. v.74, no.2. August 1940. p.204-205. Fertilizer can be spread evenly, in amounts from twenty to 2,350 pounds per acre, with distributor having hopper at convenient height for filling. Quantity to be scattered may be regulated while moving. Adjustments are accurate enough for sowing grain and clover seed. Force feed assures uniform spreading of fertilizers that become damp and sticky, and special attachment helps strew ammonium sulphate. For lime, capacity is ten to 2,350 pounds to acre. Implement is said to be especially suited for apply-top dressings to pastures, meadows and orchards.

Orchard Heaters.

Automatic regulators on orchard heaters. By R. A. Kepner. California citrograph. v.25, no.11. September 1940. p.366-367.

Paints and Painting.

Influence of variations in wood grain angle upon the accelerated weathering testing of exterior house paints. By W. N. Kittelberger. ASTM Bulletin. No. 107. December 1940. p.29-34.

Pest Control.

Combatting the rat menace. Popular mechanics. v.75, no.3. March 1941. p.412-414, 130A-131A.

Development of equipment for thrips control. By H. C. Lewis. California citrograph. v.25, no.11. September 1940. p.349.

Hot air treating machines used in the ginneries for the destruction of pink boll worm in the cotton seed. By Mohanned Fouad El Gamnal. Cairo, Government press, 1940. 19p. Egypt. Ministry of agriculture. Technical and scientific service. Bulletin no. 150.

Power.

FPC reports basic data for defense power needs. Power. v.85, no.3. March 1941. p.56-58. Regional load and capacity compiled by Federal Power Commission uses utilities, own estimates of dependable output and reserves. Analysis of Pittsburgh district presented here indicates method of calculation applied to all areas.

Mechanical power transmission. By F. A. Annett. Power. v.85, no.2. February 1941. p.71-86. Flexible couplings. Clutches. Belt drives. Rope drives. Chain drives. Variable-speed transmissions. Bearings and hangers. Gear drives.

Production Costs.

Equipment, methods, and costs of collecting corn stalks. By Brownlee Davidson. Agricultural engineering. v.22, no.2. February 1941. p.68. Table gives distribution of the cost per ton of baled corn stalks at the factory.

How much does it cost to produce sugar beets? The potash journal. v.5, no.1. Jan.-Feb. 1941. p.10-11, 20. Table shows relation of sugar beet yield to costs of production, 1933-36.

Production costs in Orange county. California citrograph. v.25, no.11. September 1940. p.370-371. Table gives general summary of the main profit determining factors in the 1939 valencia cost study.

Public Works.

Value of public works. By J. P. Hallihan. American society of civil engineers. Proceedings. v.67, no.2. February 1941. p.169-176. It has long been theory in United States that cyclic depressions in industry, due to lack of market for goods produced, resulting in largescale unemployment, could be alleviated materially by increased activity in field of public works--in construction of facilities requiring no market except approval of people. Opinion was also widely held that transfer of man power released by industry into operations of public works would be simple process performed with no great loss of time, and that equivalent employment would sustain purchasing power of nation until industry returned to normal basis. Nine years 1931 to 1939 have furnished opportunity to test these theories, and it may be useful to review record to determine to what extent they have been supported in practice.

Pumps and Pumping.

Irrigation water pumping costs in Beryl area investigated. By George D. Clyde. Farm & home science. v.2, no.1. March 1941. p.7-8. Available water will not irrigate over 5,000 acres.

Rainfall and Runoff.

Abnormal rainfall in Texas. Engineering news record. v.126, no.1. January 2, 1941. p.37.

An evaluation of the Bergeron-Findeisen precipitation theory. By A. K. Stickley. Monthly weather review. v.68, no.10. October 1940. p.272-279.

Reliability of station-year rainfall frequency determinations: Discussion. By Messrs. C. J. Jarvis and Howard W. Brod. American society of civil engineers. Proceedings. v.67, no.2. February 1941. p.255-259.

Reliability of station-year rainfall frequency determinations: Discussion. By Messrs. Merrill Bernard, and Charles F. Ruff. American society of civil engineers. Proceedings. v.67, no.3. March 1941. p.474-482.

Refrigerants.

Putting up natural ice feasible on many farms. Idaho farmer. v.58, no.24. November 21, 1940. p.21. Methods and tools for farm ice harvest are discussed.

Refrigeration.

Design of farm freezing units. By Richard L. Witz. Agricultural engineering. v.22, no.3. March 1941. p.105-106, 109.

Refrigerator Lockers.

Food banks of the future. By Ray P. Celt and Hiram K. Smith. Atlantic monthly. v.167, no.3. March 1941. p.362-365. Discussion of refrigerator locker.

Research.

A.S.M.E. committee on research. Mechanical engineering. v.63, no.3. March 1941. p.200-202. Statement of its functions and procedures.

Jobs from research. By Everett S. Lee. Popular mechanics. v.75, no.2. February 1941. p.161-163, 128A, 130A.

Roofs.

How to apply wood gutters on various roofs. American builder. v.63, no.1. January 1941. p.78-82. Application details

Rain on the roof. By H. B. White. Successful farming. v.39, no.3. March 1941. p.32, 58-59.

Rope.

How to detect and cure wire-rope troubles. Part 1. By A. J. Morgan. Power. v.85, no.2. February 1941. p.63-65. Shows what causes wire-rope difficulties and how to remedy them for long rope life.

How to detect and cure wire rope troubles. Part 2. By A. J. Morgan. Power. v.85, no.3. March 1941. p.73-75. Explains why and hope life is shortened by defective and improperly operated sheaves and guide rollers, internal corrosion, shock loads and lack of lubrication.

Rubber.

Artificial rubbers. Electrical review. v.128, no.3285. November 8, 1940. p.13-14. Production and properties of different varieties.

Butyl rubber. By R.M. Thomas, I.E. Lightbown, W.J. Sparks, P.K. Frolich, and E.V. Murphree. Industrial and engineering chemistry. v.32, no.10. October 1940. p.1283-1292. Paper presents results of thoroughly unorthodox approach to synthetic rubber problem. In developing their new butyl rubber, Esso Laboratories have turned to simple olefins rather than diolefins or more complicated chemical derivatives as main raw material. Not only is this an economic advantage, but ready availability of such simple olefins from refinery cracking operations makes process seem attractive from standpoint of potential supply of synthetic rubber. As only limited amount of unsaturation required for curing with sulfur has been provided, vulcanizates are substantially saturated and therefore possess chemical stability characteristic of paraffin hydrocarbon. In spite of this radical difference in internal structure, polymer can be processed in much same manner as natural rubber, and physical properties of natural rubber have been retained to surprising extent. Because of low degree of unsaturation and consequent chemical inertness, available information indicates that butyl rubber will be superior to natural rubber for many purposes.

Rubber. (Cont'd.)

Synthetic rubbers. By Lawrence A. Wood. Engineering. v.150, no.3901. October 18, 1940. p.316-317. Table I. Varieties of synthetic rubbers.

Synthetic rubbers. Part 2. By Lawrence A. Wood. Engineering. v.150, no.3902. October 25, 1940. p.335-336.

Synthetic rubbers. Part 3. By Lawrence A. Wood. Engineering. v.150, no.3903. November 1, 1940. p.356.

Synthetic rubbers. Part 4. By Lawrence A. Wood. Engineering. v.150, no.3906. November 22, 1940. p.419-420.

Silos.

Building and filling trench silos. By J. R. McCalmont. Hoard's dairyman. v.85, no.14. July 25, 1940. p.392, 399.

Storing grass silage. By Harry S. Besley. Farmers digest. v.4, no.10. February 1941. p.19-22. Discussion of silos.

Silt.

Formulas for the transportation of bed load. By H.A. Einstein. American society of civil engineers. Proceedings. v.67, no.3. March 1941. p.351-367. Method for representation of bed-load data is given in paper. Method is based on conception that bed-load transportation is movement of bed particles, as governed by laws of probability. By means of this method equation is obtained, which describes great number of experiments in channels with uniform beds. Group of experiments conducted on sand mixtures provides material for describing another application of method.

Missouri river slope and sediment. By William Whipple, Jr. American society of civil engineers. Proceedings. v.67, no.3. March 1941. p.381-403. Project for improvement of Missouri River consists primarily of open-channel regulation, which contracts natural channel in addition to materially changing its shape. General description of methods adopted is given, together with quantitative summary of effects of improvement upon length, slope, width, shape, discharge velocity, and roughness coefficient of natural stream between Rulo, Nebr., and Sioux City, Iowa. Data are supplied as to bed and suspended sediment characteristics of river, in both improved and unimproved sections. Analysis is presented of applicability of various bed-load formulas, involving both competence and capacity, to prediction of future slope of rivers; and results are compared with observations to date (1940) on completed sections of the river. It is generally concluded that: (1) Formulas involving competence will not give answer to this particular problem; (2) mean slope of Missouri River eventually will decrease through operation of contraction works; and (3) bed of river will scour out progressively for some time to come.

Soils.

Non-distorting soil sampler. By F. B. Slichter. Engineering news record. v.125, no.23. December 5, 1940. p.60-61.

Storage of Farm Produce.

Effect of cooking and storage on the ascorbic acid content of potatoes. By Lydia A. Rolf. Journal of agricultural research. v.61, no.5. September 1, 1940. p.381-395.

Gas storage of apples. By Lawrence Southwick. New England homestead. v.114, no.1. January 11, 1941. p.9, 14-15. Primary function is to slow down rate of ripening without causing injury.

Halving the cost of fruit storage. By William Leonard. Successful farming. v.39, no.2. February 1941. p.29.

Observations on the storage of grass silage. By H. E. Besley and J. R. McCalmont. Agricultural engineering. v.22, no.2. February 1941. p.51-53.

Sectional wood grain bin. By Roland A. Glaze. Agricultural engineering. v.22, no.3. March 1941. p.93-94. Effort concentrated on eight major points as follows: 1. Floors and walls which would be tight and prevent spoilage from moisture. 2. Floor safe from rodent damage. 3. Floor of low-cost materials obtainable at any lumber yard. 4. Wall section suitable for prefabrication and light enough to permit easy handling. 5. Elimination of hoops, bands, and other gadgets commonly used to resist pressure of grain. 6. Tight sectional roof easily assembled. 7. Low-cost wooden ventilator. '. Bin of low cost made from available lumber stocks.

Surveying.

Miniature system of first-order alinement and triangulation control. By Floyd W. Hough. American society of civil engineers. Proceedings. v.67, no.2. February 1941. p.229-232.

Swine Houses and Equipment.

Electric pig brooder. By Armin J. Hill. Montana farmer. v.28, no.11. February 1, 1941. p.20.

Textile Drying.

Textile drying. By Fred Kershaw. Rayon textile monthly. v.22, no.1. January 1941. p.68-69. Review of recent developments.

Textile drying. By Fred Kershaw. Mechanical engineering. v.62, no.12. December 1940. p.871-874. Review of recent developments.

Textile Fibers.

Cotton fibers--constitution, structure, and mechanical properties. By R. F. Nickerson. Industrial and engineering chemistry. v.32, no.11. November 1940. p.1454-1462. Data on constitution of raw cotton are presented and discussed. Various theories of fiber structure are reviewed. Fiber structure in which component fibrils are formed from many unit crystalline areas linked by primary-valence glucose chains appears to be most acceptable. Crystalline units probably represent crystallization of portions of adjacent glucose chains. Such mechanical properties as tensile strength, elasticity, plasticity, swelling and elastic aftereffect are summarized. Structure of type just mentioned is compatible with properties (66). One object of review has been to assemble for ready reference available data on cotton fiber constituents and properties. These data are presented in their relation to fiber structure wherever it has been possible.

"Prolon" is name of newcomer to synthetic fiber family. Popular mechanics. v.75, no.3. March 1941. p.410. Taking its place among group of synthetic fibers such as nylon and rayon is "prolon", new name for what has been called "casein wool," made from casein obtained from milk, soybeans and other sources.

Tires.

Life of a tire. Bakers digest. v.15, no.8. February 1941. p.153-154. Article outlines some of conditions that must be observed to ensure long life of a tire.

Tractors.

All-purpose tractors dominate in census. Implement record. v.38, no.3. March 1941. p.16. Manufacture and sale of tractors, combines, and grain threshers, 1940 and 1939.

Ventilation.

Cooling poultry houses for laying hens. By V. S. Asmundson. California cultivator. v.88, no.3. February 8, 1941. p.92.

Is your barn all wet? By Morris H. Lloyd. Electricity on the farm. v.13, no.11. November 1940. p.7-9. Practical side of barn ventilation.

Waste Products.

Utilization of farm residues. By R. P. Beasley. Agricultural engineering. v.22, no.3. March 1941. p.95-96. Table I. Labor and labor costs per acre.

Water, Underground.

Ground water worth millions. Part 1. By A. L. Lugn. Nebraska farmer. v.83, no.4. February 22, 1941. p.3, 12. Surveys indicate there is plenty of underground water in this state to make pump irrigation possible and profitable on large scale.

Water Conservation.

Water conservation on the Great Plains. By F. C. Fenton. Agricultural engineering. v.22, no.2. February 1941. p.45-46, 48. Practices which are gaining in favor and in use are (1) summer fallowing with new tillage practices, such as basin listing and contour tillage, (2) terracing, (3) contour farming, (4) strip cropping, (5) pasture furrows, and (6) pond construction.

Water Heaters.

An experiment in water warming. By Geo. W. Kable. Electricity on the farm. v.13, no.11. November 1940. p.13, 21.

Indirect water heater connects to boiler. By J. B. Mullen. Popular mechanics. v.74, no.5. November 1940. p.795-796.

Study of water heat demands. By R. E. Gale and J. F. Emery. Edison electric institute bulletin. v.9, no.2. February 1941. p.45-54. Shows effect of various capacities of heaters, with and without control.

Water Rights.

Analysis of legal concepts of subflow and percolating waters: Discussion. By C. F. Tolman and Amy C. Stipp. American society of civil engineers. Proceedings. v.67, no.3. March 1941. p.433-437.

Permissible composition and concentration of irrigation water: Discussion. By E. B. Dobler. American society of civil engineers. Proceedings. v.67, no.2. February 1941. p.236.

Water right procedure. By O. W. Monson. Montana farmer. v.28, no.11. February 1, 1941. p.8, 11.

Water Supply, Rural

Water system installation tips. Idaho farmer. v.59, no.1. January 2, 1941. p.2.